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Running head: EMPLOYMENT AND BREASTFEEDING STATUS

Employment and Breastfeeding Status

by

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Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Science

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### Abstract

The relationship between breastfeeding continuation at 12 weeks postpartum among employed women and job characteristics to include maternity leave status, job flexibility, and type of occupation; social variables to include relationship status and social support; and demographic variables to include education, race, and family income were determined. A comparative and descriptive design was used. Data were collected from secondary analysis of the Maternal Health pilot study. A convenience sample of 45 breastfeeding, employed women, living in a seven county area around Minneapolis and St. Paul, Minnesota, completed measures of their breastfeeding status, maternity leave status, job flexibility, occupation, relationship status, social support, education, race, and family income before discharge from the hospital after birth and at 12 weeks postpartum. Longer breastfeeding among employed women was significantly associated with having an education beyond high school, having a clerical or professional occupation, and having a longer maternity leave. After refining research techniques with the pilot study and secondary data, a more definitive study with a more generalizeable sample may be conducted.

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## CHAPTER 1

### Introduction

#### *Background*

The continuation and duration of breastfeeding are linked to improved physical and psychological health for mothers and infants. According to the statistical report by the United States Government's Healthy People 2000 (1998), only 64% of all mothers breastfed their infants in the early postpartum period, 29% at six months, and 16% at a year. Women discontinue breastfeeding for numerous reasons. Among employed women, Wyatt (2002) states that returning to work is an important influence on a woman's decision to continue to breastfeed. When new mothers discontinue breastfeeding the valuable benefits are lost (AAP, 1997; Wright, Rice, & Wells, 1996). Continuing breastfeeding provides health and psychological benefits to mothers and their infants. The employer also benefits by increased employee retention and satisfaction and decreased absenteeism.

The American Academy of Pediatrics (AAP) has clearly stated that breastfeeding is the optimal way to feed an infant and recommends that mothers exclusively breastfeed for the first six months with continuation for at least a year and thereafter as long as mother and baby desire (AAP, 1997). Breast milk is considered to be the ideal nutrition and the "gold standard" for most infants, against which all other commercially prepared infant formulas are measured.

Some of the benefits to breastfeeding a newborn include decreased rates of gastrointestinal disturbances, infections, and possibly sudden infant death syndrome (AAP, 1997). Breastfeeding may also enhance cognitive development in newborn infants (AAP, 1997). Literature documents that benefits attributed to breastfeeding may continue beyond infancy (AAP, 1997; Wright, Rice, & Wells, 1996). These benefits include increased immunity,

decreased severity of illnesses, optimal growth and development of the infant, as well as decreased medical costs and expenses for commercially prepared formula (AAP, 1997). In addition, maternal benefits include short-term benefits such as decreased rates of postpartum bleeding and faster uterine involution. Long-term benefits include improvement in bone mineralization and a decreased risk for ovarian and premenopausal breast cancer. For society, breastfeeding provides significant social and economic benefits including decreases in both health care expenses and the rate of infant illnesses.

According to Lawrence (2001) any time invested in breastfeeding is beneficial for infant health. However, for employed women, time constraints can become an issue. The return to other responsibilities such as work or school can strongly influence the duration of breastfeeding. The AAP's recommendation of exclusive breastfeeding until age six months may be difficult for many women who return to work earlier than six months postpartum. It is possible to maintain a milk supply through pumping. However, this can be a challenge if there is not space, time, or proper storage for breast milk at the workplace (Lawrence, 2001).

#### *Purpose Statement*

The purpose of this study is to determine the relationship between breastfeeding among employed women at twelve weeks postpartum and job characteristics, demographic variables, and social variables. Job characteristics include: 1) maternity leave status; 2) job flexibility; and 3) type of occupation. Demographic variables include: 1) education; 2) race; and 3) family income. Social variables include: 1) relationship status and 2) social support.



## CHAPTER II

### Literature Review

This literature review includes the following topics that are related to the purpose of this study: 1) Breastfeeding status and job characteristics, 2) Demographic variables and breastfeeding status, 3) Breastfeeding status and social variables. Research included in the literature review was identified through current research and review articles published within the past five years in peer reviewed journals and landmark studies that have influenced the topic of interest.

#### Breastfeeding Status and Job Characteristics

##### *Maternity Leave Status, Job Flexibility, and Occupation*

Researchers have investigated the employed mother's maternity leave status, occupation, and job flexibility in relation to duration of breastfeeding. Visness & Kennedy (1997) used data collected from the 1988 National Maternal and Infant Health Survey (NMIHS) and contacted these mothers with a follow up survey to investigate job characteristics associated with beginning and continuing breastfeeding. A stratified sample was obtained by race, infant birthweight, maternal age, and marital status from vital statistic records from 48 states including the District of Columbia with over sampling of Black mothers and low-birth weight infants. A total of 9,087 women were included in the sample. The authors found that 53% of mothers initiated breastfeeding in 1988 with an average breastfeeding duration of three months. Visness & Kennedy (1997) concluded that full-time employment did not have any relationship with a mother's initiation of breastfeeding, but had a significant ( $p < 0.01$ ) association with duration of breastfeeding. In addition, they found the same percentage of employed and unemployed

mothers initiated breastfeeding at delivery, but only 10% of employed mothers continued to breastfeed at six months postpartum, compared to 24% of unemployed mothers.

A study by Lindberg (1996) completed in Washington D.C. revealed that part-time employed women were more likely to continue breastfeeding longer than full-time employed women. This study obtained information from the National Survey of Family Growth Wave IV, conducted by the National Center for Health Statistics in 1988. A random stratified sample of women ages 15 to 44 was used. The sample included 1,529 non-Black women and 902 Black women. Full-time employed non-Black women compared to unemployed women were found to have a reduced probability of breastfeeding ( $p=0.076$ ). Black women employed full-time were less likely to breastfeed than non-Black women working full-time ( $p=0.9031$ ).

Fein & Roe (1998) conducted a study indicating that part-time employment is more conducive to a longer duration of breastfeeding than full-time employment. Fein & Roe (1998) used a sample of women from a random mail survey. A longitudinal data analysis was used to examine the effects of work status on breastfeeding initiation and duration. Results of this study showed that full-time employed mothers at three months postpartum had decreased breastfeeding duration with a mean value of 8.6 weeks ( $p < 0.001$ ), compared to non-employed mothers. Part-time employed mothers (working less than four hours per day) breastfeeding duration was not affected, however, women who worked more than four hours per day but less than full-time had a decreased duration of breastfeeding than full-time employed mothers. Therefore, Fein & Roe (1998) concluded that the optimal strategy to prolong the duration of breastfeeding is part-time employment of less than four hours per day. In addition, mothers with extended maternity leave have been found to breastfeed their infants longer than mothers who return to work within two months (Fein & Roe, 1998; Kurinij, Shiono, Ezrine, & Rhoads, 1989).

Yimyam, Morrow, & Srisuphan (1999) conducted a study of employed breastfeeding women in Thailand who returned to work within six months after delivery. The study was conducted in two phases. Phase one selected 14 women from a variety of employment sectors. Findings from phase one and a literature review were used to develop a research instrument to be used in phase two. In phase two 313 women were selected based on predetermined selection criteria as they entered Chiang Mai University Hospital or Chiang Mai University's Child Care Centre. The study's sample reflected the demographic characteristics of the community consisting of urban employed women in Thailand. Qualitative and quantitative analysis were used. Qualitative data was interpreted and analyzed via grounded theory and quantitative data was analyzed using standard statistical package SPSS. The researchers concluded that women in the sample desired to combine breastfeeding and employment but encountered many difficulties in doing so. As in the United States, families in Thailand depend on both parents to be employed to decrease economic pressures on the their family. Therefore, when problems arise, it is not an option for the employed mother to choose breastfeeding over her job. A limitation to this study is that employed women in the Thailand may not represent the population of employed women in United States.

The mother's occupation contributes to breastfeeding duration as well. Occupations associated with early weaning, prior to or after resuming employment, included factory and assembly line jobs (Kurini, et al., 1989). In Thailand, researchers study interviewed 313 employed women to explore their experience of returning to work within six months postpartum and breastfeeding (Yimyam et al., 1999). Many employed women faced several obstacles that made it difficult to continue breastfeeding their infant. In Thailand, the breastfeeding rate is 99% in early postpartum, but quickly decreases after the mother's return to work. In general,

returning to work had a negative impact on breastfeeding rates and duration for employed women in Thailand. However, women who worked at home breastfed longer than Thai women employed in the private sector. Mothers in Thailand who work outside the home for more than eight hours per day or do shift work often find it difficult to overcome barriers to continuing to breastfeed their infant. Barriers include employment with inflexible hours and a limited amount of maternity leave, which influence the mothers' choice to either breastfeed or work. Because of these barriers, many women who worked outside the home discontinued breastfeeding after the first month of returning to work.

Thai women have short maternity leaves compared to some of the Scandinavian countries (Yimyam et al., 1999). Twenty-four percent of Scandinavian women have at least three months of leave, while the majority of Thai women have less than three months. Also, many women work on a casual basis, temporary, part-time or subcontractual, and do not have the benefit of maternity leave. Less than three months of maternity leave may have a negative effect on breastfeeding duration. The authors concluded that in order for Thailand women to successfully combine breastfeeding and employment, mothers need frequent contact with their infants, supportive employers and husbands, adequate maternity leave, flexible work hours, and child care facilities located in the employment setting.

Women in professional occupations are more likely to continue breastfeeding after returning to work (Visness & Kennedy, 1997). This has been speculated to be due to an increase in job flexibility in the professional setting (Visness & Kennedy, 1997; Lawrence 2001). Factors associated with longer duration of breastfeeding included job flexibility, perceived control over work environment, and longer maternity leave, which were associated with professionally and self employed mothers (Kurini et al., 1989).

## Breastfeeding Status and Demographic Variables

### *Education, Race, and Family Income*

Demographic variables that have been studied in relationship to the duration of breastfeeding for nursing mothers include education, race, and income (Visness & Kennedy, 1997; Evers, Doran & Schellenber, 1998; Kuan, et al., 1999; Hoddinott, Pill, & Hood, 2000; Novotny et al., 2000). Longer breastfeeding duration has been associated with education beyond high school (Visness & Kennedy, 1997; Evers, Droan, & Schellenberg, 1998; Kuan, et al. 1999; Novotny, et al. 2000). Visness and Kennedy (1997) used a sample from the NMIHS consisting of 9,087 women across the nation. Evers, Droan, & Schellenberg (1998) used a convenience population of low-income women within the geographical boundaries of the four Better Beginnings communities that were selected based on indicators of risk (living in subsidized housing, on social assistance, or unemployed) and one comparison community in Ontario, consisting of 270 participants. Kuan et al. (1999) used a convenience sample of 522 women from a prospective cohort study of women from five area hospitals. Novonty et al. (2000) used a sample of 2,011 women who delivered their children in Hawaii. All of these diverse studies, using different geographical locations, income levels, and ethnicities, found that women with higher levels of education breastfed longer, making the results generalizeable to a large population of breastfeeding women. Hoddinot, Pill, & Hood (2000) conducted a study using a convenience sample of 279 mothers from three hospitals in inner London. They found that White women who discontinued full-time education at 16 years of age or less were less likely to continue breastfeeding at six months postpartum ( $p=0.03$ ) than White women with more education. However, education was not determined to be a significant predictor of breastfeeding duration for other ethnic backgrounds. This sample consisted of 70% White participants and

30% from other ethnic groups. Since the number of different ethnic groups in the study was small and the study was performed in London, it is not generalizable to the United States population.

When looking at race, Visness and Kennedy (1997) found that the longest duration of breastfeeding was among White, working women. This finding was attributed to White women having the most control over their working conditions. Women with professional occupations were more likely to breastfeed, while women with manufacturing occupations were less likely to breastfeed, when compared with women not working or women in other occupational categories. Thus, breastfeeding duration may be more economically related than ethnicity in this study. Kuan et al., (1999) also found that breastfeeding duration was not significantly related to ethnicity. Kuan et al. (1999) used a convenience sample of 522 women from a prospective cohort study of women from five large level II and level III hospitals in Ohio. Ninety percent of the women from this study were White, 7.5% were African American, and 3.6% were Asian or Pacific Islander. The majority of the women in the study were highly educated and motivated with strong support at home. Visness and Kennedy's (1997) sample came from the NMIHS consisting of 9,087 women across the nation, making it more generalizable to a large population. Sixty-seven and one-half percent of these women were White, 15.4% were Black, 12.7% were Hispanic and 4.4% were of other ethnicity. In agreement with Visness and Kennedy's (1997) research, Noventy et al. (2000) found that risk factors for early weaning included being born outside of the United States or having a Japanese ethnicity. However, this study was conducted with a sample of 2,011 women who delivered their children in Hawaii, limiting it to a small geographical area. Thirty-one percent of the sample was Caucasian, 22% part Hawaiian, 15% Japanese, 12% Filipino and the rest from other ethnicities.

Longer periods of breastfeeding have also been found among women without financial stress or with higher family income levels (Visness & Kennedy, 1997; Evers, Doran, & Schellenberg, 1998). Visness and Kennedy's (1997) national study consisting of 9,087 women found that women with higher incomes were most likely to breastfeed their children. Evers, Doran and Schellenberg (1998) used a smaller study of 270 low-income women in Ontario and found that women who were not under financial stress were more likely to breastfeed. This indicates that perceived financial stress was a better predictor of feeding practices at birth than actual income for women living in Ontario.

#### Breast Feeding Status and Social Variables

##### *Available Social Support and Marital Status*

A mother's attitude and beliefs about infant feeding methods are influenced by interactions in her informal and formal social network (Raj & Plichta, 1998). These social interactions may be positive or negative, but all attitudes will influence the mother's intentions and duration of breastfeeding as well as her confidence and persistence in breastfeeding. The type of social support a mother may receive depends on her age, social class, ethnic group, and culture. Social support may be informal or formal. Informal support consists of the infant's father, family, and friends. Formal support consists of lactation support groups, lactation counselors, obstetrical providers, pediatricians, and maternity staff.

Numerous studies reviewed by Bar-Yam and Darby (1997) have indicated that the father is the most important source of tangible, emotional, and informal support for a breastfeeding mother. The father's support may be the most important predictor of the mother's decision of whether or not to breastfeed. If the father is not supportive of a mother's decision to breastfeed, the mother is more likely to bottle feed her infant. Fathers also impact the duration of

breastfeeding. Another important source of social support is the mother's friends and relatives. A literature review conducted by Raj and Plichta (1998) of support and breastfeeding promotion concluded that a mother's family members and friends increased her chances of breastfeeding. The most influential support person for breastfeeding varies among the different cultures and ethnic groups. For example, the infant's father was the most influential person for Caucasian, African American, and Hispanic mothers to initiate and continue to breastfeed. Yet, the grandmother was the most important source of support for the Mexican-American mother. One of the reviewed studies comparing breastfeeding and bottle feeding suggested that the support from a lay person (other than the father or partner) increased the chance of breastfeeding by a factor of 3.3. The mother's own mother and her friends were also important sources of support. However, teenage mothers were more likely to breastfeed if they were breastfed or they had been around women who had breastfed.

Bar-Yam & Darby (1997) conducted a review of research studies that focused on the relationship of fathers and breastfeeding. They concluded that research has continually identified fathers as an important factor in the decision and implementation of breastfeeding. In addition, many of the research studies indicated that fathers influence four aspects of breastfeeding including breastfeeding decision, assistance at first feeding, duration of breastfeeding, and risk factors for bottle feeding. After reviewing the studies, the authors concluded that there was a strong relationship between a father's attitude toward breastfeeding and the mother's intention and duration of breastfeeding. For example, various studies have stated that if the father has a positive attitude towards breastfeeding, then the mother was more likely to breastfeed. If the father had a negative attitude and did not provide support, then the mother was more likely to bottle feed her infant.



Studies included in Bar-Yam & Darby's (1997) literature review examined factors associated with breastfeeding continuation with the importance of the father's support. In one study, mothers were administered the Utilization of Support Network Questionnaire at two weeks postpartum which had mothers rate various support systems. Mothers who were breastfeeding had higher support scores than those mothers, who were bottle feeding, which concluded that support contributes to breastfeeding. Another study conducted by Breven et al. included a sample of mothers in an urban WIC program and concluded that the father's preferred feeding method was significantly associated with the duration of breastfeeding ( $p=0.0380$ ).

The last study included in Bar-Yam and Darby's (1997) literature review was conducted by Beske and Garvis. Their sample included 94 breastfeeding women who were divided into three groups dependent on the duration of breastfeeding (90 days, 90-150 days, and greater than 150 days). The mothers were given questionnaires after birth, at one month, and again at six months or after weaning. Mothers who breastfed longer than 150 days stated that the baby (37.7%) and the father (24.6%) gave her the most encouragement for continuation of breastfeeding. For the women who breastfed for a shorter duration, 41.2% stated that the father was the most influential person for support.

Raj and Plichta (1998) reviewed literature suggesting that formal social support increases breastfeeding initiation and duration. Formal social support system included lactation counselors, peer support groups, and medical professionals. Lactation counselors provided support after the mother's discharge from the hospital. Peer groups were found to be beneficial in duration of breastfeeding. Another important influence on the mother's decision to breastfeed was the mother's health care provider and maternity staff. Hospital breastfeeding policy and staff attitude played an important role in initiation and duration of breastfeeding. A mother was

more likely to breastfeed if the hospital actively supported breastfeeding. Hospital support included prenatal and breastfeeding classes, informational sources, maternity staff support, information on support groups, lactation counselors, lactation equipment information, and follow up after discharge.

Two studies have found that social support and marital status affected the initiation and duration of breastfeeding (Kuan et al., 1999; Visness & Kennedy, 1997). One study found that married women initiated breastfeeding at a higher rate (Visness & Kennedy, 1997). A second study found the duration of breastfeeding was longer for married women than unmarried women (Kuan et al., 1999). The likelihood to breastfeed may be compounded by more than one variable. Marital status as well as social support of a live-in partner may affect the likelihood to breastfeed.

#### *Literature Review Summary*

The literature review suggests that job characteristics, demographic factors, and social variables are related to initiation and duration of breastfeeding. These studies all have been done with unique populations in regards to age, ethnicity, and level of income of the mothers involved. However, there have been few studies focusing on a population of working women who choose to breastfeed and the factors that are related to the duration of breastfeeding in the postpartum period (Lindberg, 1996; Visness & Kennedy, 1997; Fein & Roe, 1998; YimYam & Morrow, 1999).

The present study will extend previous research by focusing specifically on a population of employed mothers in a midwestern urban area. The relationship between duration of breastfeeding and job characteristics, demographic, and social variables will be examined. The research question is: what is the relationship between breastfeeding among employed women at

12 weeks postpartum and job characteristics, demographic variables, and social variables? Job characteristics include: 1) maternity leave status; 2) job flexibility; and 3) type of occupation.

Demographic variables include: 1) education; 2) race; and 3) family income. Social variables include: 1) relationship status and 2) social support.

## CHAPTER III

### Conceptual Model

Pender's (1987) Health Promotion Model (see Figure 1) is used as the conceptual model for this study. We are using only a part of Pender's model since we have not measured the cognitive/perceptual factors in this study. We are assuming that health promotion in this model is defined as actions; which directly or indirectly maintain health or modifying factors that will affect the cognitive/perceptual factors of the model (Polit & Hungler, 1999). The Pender model consists of two phases. The first is the decision-making phase, including two parts: 1) cognitive/perceptual factors that are motivational or detrimental to health-promoting behavior, and 2) modifying factors that indirectly influence health-promoting behavior. The variables included in this study are consistent with the five modifying factors, which impact the cognitive/perceptual factors. A person's decision about engaging in health promoting behaviors, such as the continuation of breastfeeding at twelve weeks postpartum are influenced by cognitive/perceptual factors which are related to the modifying factors that were included in the current study. The five modifying factors include demographic characteristics (education), biologic characteristics (race/ethnicity), interpersonal influences (social support and relationship status), situational factors (leave status, job flexibility, occupation, and family income), and behavioral factors. The second phase is the action phase. In this phase, both barriers and cues to action are responsible for engagement of health-promoting behavior.

We assume that the modifying factors of education, race/ethnicity, social support, relationship status, occupation, maternity leave status, job flexibility, and family income can influence a woman's cognitive/perceptual factors such as perceived control, perceived benefits of health promotion, and perceived barriers to health promotion that can influence their likelihood

of engaging in health promoting behaviors such as the continuation of breastfeeding at twelve weeks postpartum.

# Pender's Health Promotion Model

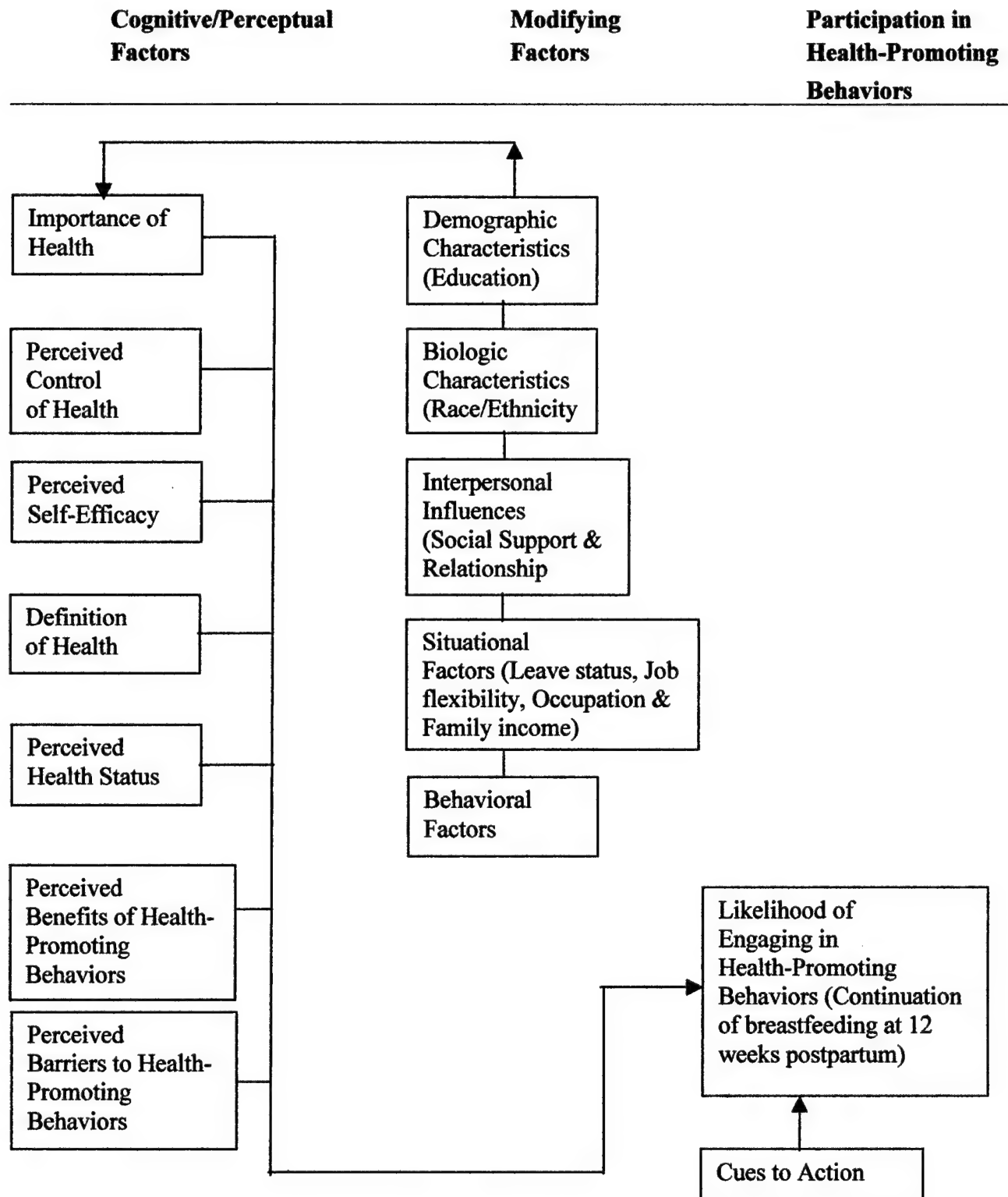


Figure 1

## CHAPTER IV

### Methods

#### *Research Questions*

1. What is the relationship between breastfeeding continuation among employed women at twelve weeks postpartum and job characteristics, including leave status, job flexibility, and type of occupation?
2. What is the relationship between breastfeeding continuation among employed women at twelve weeks postpartum and demographic variables including education, race, and family income?
3. What is the relationship between breastfeeding continuation among employed women at twelve weeks postpartum and social variables including relationship status and social support?

#### *Assumptions*

1. Continued breastfeeding is a health-promoting behavior for all women and their infants.
2. Study participants provided accurate responses.
3. Interviewers recorded responses accurately.
4. Medical record data were accurate.
5. Data were entered accurately.
6. The relationship between modifying variables and health promoting behavior outcomes can be measured directly, without measuring cognitive/perceptual factors in Pender's Health Promotion Model.

### *Design*

This study aims to describe the relationship between job, demographic, and social variables and breastfeeding status among employed mothers at twelve weeks postpartum. This is a study based on a secondary analysis of data originally collected as a part of the Maternal Health Study, conducted by Patricia McGovern in the Occupational Health Division of Environmental and Occupational Health in the School of Public Health at the University of Minnesota. McGovern's pilot study started in fall of 2000 and was funded by the National Institute for Occupational Safety and Health (NIOSH). The current study utilizes a subset of the pilot study data that examined the relationship between selected variables and breastfeeding status among employed women at 12 weeks postpartum. This study used a longitudinal, descriptive, and correlational design. The original data for the pilot study were collected among postpartum hospitalized women using a standardized interview and survey. Current available data used in this study include data from the initial postpartum and 12 week postpartum interviews. For occupational and social variables, immediate postpartum data were compared to the 12 week postpartum interview. Demographic data were only collected at the initial interview. This initial pilot study data will be used to analyze the selected variables and their relationship to breastfeeding status at twelve weeks postpartum. The questionnaires for the study are included in Appendix A and Appendix B.

### *Pilot Study Sample*

For purposes of this study, a sub-set of subjects was selected. Inclusion criteria for subject inclusion in the current study were being employed, working twenty hours or more a week during pregnancy and choosing to breastfeed immediately postpartum. The pilot study sample consisted of a convenience sample of women distributed among three metropolitan



hospitals (North Memorial, St. Johns, and St. Joseph's) obstetrical units in the Minneapolis-St. Paul area. Forty-five women for this study were used from the pilot study sample (n=60). Eligibility requirements for the pilot study and Maternal Health Study included: being at least 18 years old; speaking English; giving birth to a single live infant with no serious neonatal complications or congenital anomalies; living in one of the seven counties of the Minneapolis-St. Paul area (Hennepin, Washington, Carver, Anoka, Ramsey, Scott, or Dakota); being employed and working at least 20 hours a week during the last trimester of the current pregnancy; and planning to continue with the same employer after childbirth. Exclusion criteria included less than 18 years of age, not residing in the seven selected counties, non-English speaking, multiple births, fetal demise, adoption, birth-weight less than 1800 grams, less than 34 weeks gestation, or having any serious neonatal complications or congenital anomalies.

A preliminary qualification form, that included information from hospital records, was used to determine if women were eligible for the pilot study. If a woman was found to be eligible, she was briefly interviewed by a specially trained staff nurse to assess further eligibility and interest in the study. Further eligibility requirements consisted of being currently employed, even if on maternity leave, planning to return to work for the same employer, having worked for this employer for at least the past three months, and working 20 or more hours a week. For women who consented to participate, the study nurse conducted a brief interview in the patient's hospital room to gather baseline information. At the same time, demographic information and additional health status information were also collected from hospital records. The women who agreed to participate were also interviewed at six weeks, three months, six months, 12 months, and 18 months after childbirth by telephone interview specialists. A five-dollar gift certificate to a local department store was provided after completing each interview, with an additional five

dollars given after completing all of the study interviews.

### *Operational Definitions*

The terms employed women, breastfeeding status, leave status, occupation, job flexibility, available social support, relationship status, education, race, and family income were defined and measured in the study according to the following operational definitions.

- 1) Employed women were considered to be women working at least 20 hours a week, either self-employed or working for an employer. These women must have been self-employed or worked for an employer for the three months before delivery and plan to return to the same employer after maternity leave or to stay self-employed.
- 2) Breastfeeding status was considered to be on a continuum from full or partial breastfeeding to not breastfeeding. Breastfeeding includes giving the child breast milk only or a combination of breast milk and infant formula or cow's milk, soymilk, or other. Breastfeeding status was re-coded. Women who indicated that they were currently using any amount of breastfeeding were assigned to group one and women who were not using any form of breast milk were assigned to group two.
- 3) Breastfeeding duration was defined as the length of time a mother fed her infant with breast milk, or the combination of breast milk and formula, cows milk, or soymilk.
- 4) Type of delivery was considered as vaginal or cesarean.

**Job Variables:**

- 5) Leave status was defined using two categories back to work/off leave or on leave yet still employed. Leave status was broken down into two groups: women who were on leave from their job were assigned to group one, not working, and women who were back to work were assigned to group two, working.
- 6) Occupation status was defined by the mother's job title and description of work duties, including if her job title and/or job duties have changed since the initial postpartum interview. Categorization was determined by their current job title and job duties. Occupations were collapsed into three groups: clerical, service, and professional. Examples of clerical occupations include administrative assistant, assistant office manager, and project consultant. Examples of service occupations include certified medical assistant, nanny, and housekeeper. Examples of professional occupations include information systems manager, teacher, and registered nurse. The above categorization was determined by the three investigators of this secondary data analysis based on their interpretation of the mother's job description.
- 7) Job flexibility was an additive composite of responses to five questions. The three ranked questions included were 1) take time off during the workday, 2) change the hours you begin or end work, and 3) do job related work at home. Response options were very hard (1 point), somewhat hard (2 points), not too hard (3 points), not at all hard (4 points). Additional

response options were unsure, or refused. A mean score for the three questions was calculated. The higher the mean score, the more flexible the job.

#### Social Variables:

- 8) Available social support was measured by adding and calculating the scores for three questions measuring type and availability of support resulting in one composite score. The participants provided responses to the following: 1) someone to confide in or talk to about her problems, 2) someone to get together with for relaxation, 3) someone to help her with daily chores if she is sick, 4) someone to turn to for suggestions about how to handle a personal problem, 5) and someone to love and make you feel wanted (other than her infant). Response options included: none of the time (1 point), little of the time (2 points), some of the time (3 points), most of the time (4 points), and all of the time (5 points). Additional options were unsure and refused. Social support was collapsed through combining the answers to five items to get a mean score. The higher the score, the more available social support.
- 9) Relationship status was defined as 1) committed relationship or 2) non-committed relationship. Being married or living with a partner was considered as a committed relationship. A non-committed relationship or single was defined as being single which included being never married, divorced or separated, widowed, or not cohabitating.

**Demographic Variables:**

- 10) Race was defined categorically as 1) White or 2) non-White. Race was re-coded into two categories: any women who responded as White/Caucasian were assigned to group one, and all other responses were assigned to group two.
- 11) The highest level of education is defined categorically as 1) high school graduate or less and 2) further than high school education.
- 12) Family income was defined as the reported total earned and unearned income for the household in 1999, as an estimation of the exact figured amount. An exact income amount was provided by the subjects and was combined into \$10,000 increments.

***Human Subjects Approval***

Approval for secondary analysis of an existing data set (Appendix C) was obtained from the University of Minnesota Institutional Review Board Human Subjects Code # 0207E28505. The study was determined to be exempt from review under federal guidelines. The original study was approved by the University of Minnesota Institutional Review Board in 1999. Verbal permission was granted from Dr. Pat McGovern for the use of her study data. All subjects gave informed consent to participate in the Maternal Health Study by signing a consent form (Appendix D). The consent form indicated that the participant was over 18 years of age, knew they would be exposed to personal questions, and knew that if they chose to be involved in the study, they could refuse to answer any question and could withdraw from the study at any time.

*Data Analysis Plan*

Data were entered into a computerized database using SPSS version 11.0 software for analysis. Distributions and frequencies were calculated for the variables of maternal age, relationship status, race, parity, highest level of education achieved, and type of birth. By convention, a 0.05 level of statistical significance was used.

Question 1: What is the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and job characteristics, including leave status, job flexibility, and type of occupation? To analyze the relationship between breastfeeding status at 12 weeks postpartum with leave status and type of occupation chi-square analysis were used. Descriptive statistics and a Mann-Whitney test were used to analyze the relationship between breastfeeding status at 12 weeks postpartum and job flexibility.

Question 2: What is the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and demographic variables including education, race, and family income? Chi square analysis was used to analyze the relationship between breastfeeding status at 12 weeks postpartum with education and race we will use chi-square analysis. To analyze the relationship between the ranked variable of family income and the categorical variable or breastfeeding status, a Mann-Whitney test was used.

Question 3: What is the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and social variables including relationship status and social support? Chi-square analysis was used to analyze the relationship between breastfeeding status at 12 weeks postpartum and relationship status. The relationship between social support and breastfeeding status at 12 weeks postpartum was analyzed with a Mann-Whitney test and descriptive statistics.

## CHAPTER V

## Results

*Descriptive Data*

The sample consisted of 45 women who chose to breastfeed immediately postpartum. They were all employed and worked over 20 hours per week with intentions to return to work postpartum. Sixty-four percent of the women were over the age of thirty. The majority were from a White/Caucasian background and were in a committed relationship. Forty-two percent of the participants were first time mothers with the majority of the women (58%) having other children. Primarily our sample was a well-educated group. Cesarean section rate was consistent with current national prevalence rates. See Table 1.

**Table 1: Sample Demographic Characteristics**

<b>Demographics</b>	<b>n</b>	<b>%</b>
<b>Age Distribution</b>		
18-29 years	16	35.6
30-35 years	18	40
36-38	11	24.4
<b>Relationship Status</b>		
Committed relationship	36	80
Non Committed	3	6.7
Missing	6	13.3
<b>Race</b>		
White	34	75.6
Non-white	9	20
Missing	2	4.4
<b>Parity</b>		
0	19	42.3
1	15	33.3
2	5	11.1
3	5	11.1
4	1	2.2
<b>Education</b>		
High School Graduate and Less	15	33.3
Education Beyond High School	30	66.7
<b>Type of Delivery</b>		
Vaginal	38	84.4
C-Section	7	15.6
<b>Total(n=45)</b>		



*Data Analysis*

Question 1: What is the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and job characteristics, including maternity leave status, job flexibility, and type of occupation? Leave status data were available for 39 of the 45 subjects. Results showed that 16.7% (3) women who were on leave or unemployed at 12 weeks postpartum had discontinued breastfeeding while 57.1% (12) of women who had returned to work by 12 weeks postpartum had discontinued breastfeeding. Chi-square analysis of leave status and breastfeeding status at 12 weeks postpartum resulted in a significant finding with a  $p$ -value of 0.010. Those who remained on leave at 12 weeks postpartum were significantly more likely to be breastfeeding at 12 weeks postpartum. Returning to work was negatively associated with continued breastfeeding.

**Table 2: Maternity Leave Status**

<b>Breastfeeding and Maternity Leave Status</b>		
<b>Not Breastfeeding</b>	<b>Leave/Unemployed</b>	<b>Working/Off Leave</b>
n	3	12
%	16.70%	57.10%
<b>Breast</b>		
n	15	9
%	62.50%	42.90%
<b>Missing</b>	6	
$\chi^2=6.709, df=1, p=.010$		

There were complete data on the three items that made up the job flexibility variables for 39 (86.7%) of the 45 subjects. Calculations showed that women who were no longer

breastfeeding at 12 weeks postpartum had a mean job flexibility score of 2.24 (with a score of one being least flexible and a score of four being most flexible) compared to women who continued to breastfeed at twelve weeks postpartum (mean job flexibility of 2.49). A Mann-Whitney test for the 39 women yielded a *p*-value of 0.618. Perceived job flexibility was not significantly associated with breastfeeding at 12 weeks postpartum. When the 21 women who had returned to work at 12 weeks postpartum were compared to those 18 women who continued to be on maternity leave, the resulting Mann-Whitney test yielded a *p*-value of 0.464.

**Table 3: Breastfeeding and Job Flexibility**

<b>Job Flexibility</b>	<b><u>n</u></b>	<b><u>%</u></b>
<b>Not Breastfeeding</b>		
Very Hard	1	6.66%
Somewhat Hard	10	66.66%
Not Too Hard	3	20.00%
Not at all Hard	1	6.66%
<b>Missing</b>	<b>4</b>	
<b>Breastfeeding</b>	<b><u>n</u></b>	<b><u>%</u></b>
Very Hard	6	25.00%
Somewhat Hard	6	25.00%
Not Too Hard	5	20.83%
Not at all Hard	7	29.16%
<b>Missing</b>	<b>2</b>	

MW=43.000, *p*=.464

There were available data for 42 (85.7%) of the 45 subjects regarding occupational status. Results showed that 13 (61.9%) of women with office/clerical jobs, 7 (87.5%) of women with professional occupations, and 4 (30.8%) of women with service occupations continued to breastfeed at 12 weeks postpartum. Chi-square analysis revealed a significant relationship between occupational status and breastfeeding status at 12 week postpartum with a resulting *p*-

value of 0.032. Those in service occupations were least likely to continue breastfeeding at 12 weeks postpartum. Professional women were most likely to continue breastfeeding at 12 weeks postpartum.

**Table 4: Breastfeeding and Occupation**

Occupation	Office/Clerical	Professional	Service	Total
<b>Not Breastfeeding</b>				
n	8	1	9	18
%	38.10%	12.50%	69.20%	42.90%
<b>Breastfeeding</b>				
n	13	7	4	24
%	61.90%	87.5	30.80%	57.10%
<b>Missing</b>	3			
X <sup>2</sup> =6.897, df=2, p=.032				

Question 2: What is the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and demographic characteristics including education, race, and family income?

Table 5 shows the results of Chi-square analysis that revealed a significant relationship between educational achievement and breastfeeding status at 12 weeks postpartum ( $p = 0.029$ ). Almost 67% of women with an education beyond high school continued to breastfeed for 12 weeks, whereas almost 31% of women with no education beyond high school continued to breastfeed at 12 weeks postpartum. See Table 5.

**Table 5: Breastfeeding and Education Level**

<b>Education</b>	<b>H.S. Grad or Less</b>	<b>Greater than H.S. Grad</b>
<b>Not Breastfeeding</b>		
n	9	10
%	69.20%	33.30%
<b>Breast</b>		
n	4	20
%	30.80%	66.70%
<b>Missing</b>	2	
<b>X<sup>2</sup>=4.739, df=1, p=.029</b>		

Race was reported for 43 (95.5%) of the subjects. Among White women, 14 (41.2%) were no longer breastfeeding at 12 weeks postpartum, compared to 5 (55.6%) of the non-White women. Chi-square analysis revealed that there was not a significant relationship between race/ethnicity and breastfeeding status at 12 week postpartum with a *p*-value of 0.440.

**Table 6: Breastfeeding and Race**

<b>Race</b>	<b>Caucasian</b>	<b>Non Caucasian</b>
<b>Not Breastfeeding</b>		
n	14	5
%	41.20%	55.60%
<b>Breastfeeding</b>		
n	20	4
%	58.80%	44.40%
<b>Missing</b>	2	
<b>X<sup>2</sup>=.597, df=1, p=.477</b>		

Thirty-four (75.5%) subjects reported family income. Women who had discontinued breastfeeding at 12 weeks postpartum had a mean family income of \$60,428 whereas women who continued to breastfeed had a mean income of \$68,975. The Mann-Whitney analysis revealed no significant relationship between family income and breastfeeding status at 12 weeks postpartum with a *p-value* of 0.148.

**Table 7: Breastfeeding and Family Income**

<b>Family Income</b>	<b>Not Breastfeeding</b>	<b>Breastfeeding</b>
\$20,000-30,000	3	0
\$30,001-40,000	3	5
\$40,001-50,000	1	0
\$50,001-60,000	3	3
\$60,001-70,000	0	4
\$70,001-80,000	0	1
\$80,001-90,000	1	2
\$90,001-100,000	1	4
\$100,001-110,000	0	1
\$110,001-120,000	1	0
\$120,001-130,000	0	0
\$130,001-140,000	0	0
\$140,001 +	1	0
<b>Missing</b>	<b>5</b>	<b>6</b>
<b>MW=98.500, p=.148</b>		

Question 3: What is the relationship between breastfeeding continuation among employed women at 12 weeks postpartum among employed women and social variables including relationship status and social support?

Thirty-nine (86.6%) subjects reported on relationship status. For women who were married or in a committed relationship, 14 (38.9%) discontinued breastfeeding at 12 weeks postpartum and 22 (61.1%) continued breastfeeding. For women who were single or not in a

committed relationship, 1 (33.3%) discontinued breastfeeding at 12 weeks postpartum and 2 (66.7%) continued breastfeeding. Chi-square analysis revealed that there was no significance between relationship status and breastfeeding continuation at 12 weeks postpartum ( $p = 0.849$ ).

**Table 8: Breastfeeding and Relationship Status**

Relationship Status	Committed	Non Committed
<b>Not Breastfeeding</b>		
n	14	1
%	38.9	33.3
<b>Breastfeeding</b>		
n	22	2
%	61.1	66.7
<b>Missing</b>	6	
$X^2=.036, df=1, p=.849$		

For all items included in the social support variable, complete data were available for 39 (86.6%) women. The mean score for social support among mothers who are not breastfeeding ( $n=15$ , with 4 missing) was ( $m$ ) 4.1467 ( $SD=.7800$ ). Among mothers who were breastfeeding ( $n=24$ , with 2 missing), the mean score was ( $m$ ) 4.1083 ( $SD=.8885$ ). The Mann-Whitney revealed that there was little variability and no relationship between the amount of social support and breastfeeding status at 12 weeks postpartum among employed women ( $p = 0.853$ ).

Regardless of breastfeeding status, the majority of women indicated adequate social support.

See Table 9.

**Table 9: Breastfeeding and Available Social Support**

<b>Social Support</b>	<b>n</b>	<b>%</b>
<b>Not Breastfeeding</b>		
None of the Time	0	0%
Little of the Time	0	0.00%
Some of the Time	4	21.10%
Most of the Time	4	21.00%
All of the Time	7	36.80%
<b>Missing</b>	<b>4</b>	<b>21.05%</b>
	<b>n=19</b>	<b>100%</b>
<b>Breast</b>		
None of the Time	0	0.00%
Little of the Time	1	3.85%
Some of the Time	5	19.23%
Most of the Time	6	23.07%
All of the Time	12	46.15%
<b>Missing</b>	<b>2</b>	<b>7.69%</b>
	<b>n=24</b>	<b>100%</b>

## CHAPTER VI

## Discussion and Conclusion

*Discussion*

The purpose of this study was to determine the relationship between breastfeeding continuation among employed women 12 weeks postpartum and job characteristics including maternity leave status, job flexibility and type of occupation; social variables including relationship status and social support; and demographic variables including education, race, and family income. Past literature has found employment characteristics and demographic and social variables related to the initiation and duration of breastfeeding (Visness & Kennedy, 1997; Evers, Doran & Schellenberg, 1998; Kuan, et al., 1999; Novotny, et al., 2000). However, no studies were identified that have focused on a unique population of employed women in a midwestern urban area who choose to breastfeed and the factors that are related to the duration of breastfeeding in the postpartum period. Therefore, this study contributes valuable preliminary data on variables related to the breastfeeding duration of employed mothers.

The first research question focused on determining the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and employment characteristics. Leave status was found to be significantly related to breastfeeding status at 12 weeks postpartum. Those women who were back to work had a higher discontinuation of breastfeeding (57.1%) than those mothers still on leave (16.7%). These statistics are consistent with existing data that documents that mothers with longer maternity leaves breastfeed their infants longer than mothers who return to work within two months (Fein & Roe, 1998; Kurinij, Shiono, Ezrine, & Roads, 1998).



The next employment characteristic, job flexibility, was not significantly related to the breastfeeding status of women at 12 weeks postpartum. We thought that the insignificant findings might be related to mothers who are still on maternity leave perceiving their job to be more flexible. Perhaps the women who continued to be on maternity leave have forgotten the demands of the job force. However, the revised test, using only the currently working mothers (n=21) was not significant. These results do not coincide with other research stating that job flexibility has been found to have a significant effect on decreasing the continuation of breastfeeding (Visness & Kennedy, 1997; Lindberg, 1996). However, in our study the women were not separated by part-time or full-time employment, which could have increased the perception of job flexibility.

The last employment characteristic evaluated was occupational status. Occupational status was found to be significantly related to the duration of breastfeeding for employed mothers at 12 weeks postpartum. Women with service occupations (69.2%) were least likely to continue with breastfeeding, while 38.1% of the women with office/clerical jobs and 12.5% of the women with professional occupations discontinued breastfeeding. These results correlate with other studies. Kurinij, et al, 1989, found occupations associated with early discontinuation of breastfeeding to include factory and assembly line jobs. Viness & Kennedy, 1989, found women with professional occupations to be more likely to continue breastfeeding after returning to work. Occupational status is also related to job flexibility, since professionals are more likely to have control over their jobs than service workers, thus occupation status may be considered as a close proxy for job flexibility.

The second related research question focused on the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and demographic variables.

Education status was found to be significantly related to breastfeeding status at 12 weeks postpartum. More women (69.2%) with education levels of high school graduate or less discontinued breastfeeding while less women (33.3%) with education beyond high school discontinued breastfeeding at the 12 week postpartum marker. These results are similar to other studies that have found breastfeeding duration to be longer with women educated beyond high school (Evers, Droan, & Schellenberg, 1998; Kuan, et al. 1999; Novotny, et al. 2000). Further education and its relationship to longer breastfeeding status may be related to higher educated women tending to have flexible, professional jobs and more motivation to seek information on the benefits of breastfeeding than those with lesser education.

Race was the second demographic variable evaluated. Race was not significantly related to breastfeeding duration at 12 weeks postpartum. Previous studies show different results. Visness and Kennedy (1997) found the longest duration of breastfeeding with White women. However, Evers, Doran and Schellenberg (1998) found breastfeeding duration to not be significantly related to ethnicity. Our results may be related to the limited ethnic diversity of the sample with only 20% (n=9) of the sample was from a non-White background.

The last demographic variable we analyzed was family income levels. Family income was not significantly related to breastfeeding duration. Again, this may be linked to the small sample size and limited financial diversity of the group. Other studies have linked longer periods of breastfeeding to women with no financial stress or higher family income levels (Evers, Doran, & Schellenberg, 1998; Hoddinott, Pill, & Hood, 2000).

The third research question focused on the relationship between breastfeeding continuation among employed women at 12 weeks postpartum and social variables.

Relationship status was the first social variable evaluated. We found no significant relationship

between women in committed or non-committed/single relationships and breastfeeding duration at 12 weeks postpartum. This may be due to a lack of variability in our sample, since most women reported being in a supportive relationship (36 out of 39). Other studies have found that married women continue breastfeeding at a higher rate (Visness & Kennedy, 1997; Kuan, et al, 1999). Eighty percent of the sample was in a committed relationship, providing a limited number of women who were in non-committed relationships to evaluate, which may result in data that does not coincide with past research.

Social support was the other social variable analyzed. Our data did not show a significant relationship between social support and breastfeeding duration at 12 weeks postpartum. However, other studies have found social support to affect the initiation and duration of breastfeeding (Kurini, Shiono, Ezrine & Rhoads, 1989; Raj & Plichta, 1996; Bar Yam & Darby, 1997). Once again, our results may be related to the limited diversity of our sample.

Our sample consisted primarily of Caucasian women located in a metro area who utilized services in three hospitals. There are many classes and programs that are offered in these hospitals that promote breastfeeding, which could have played a role in the mothers' decision to initiate and continue breastfeeding. It would be interesting to compare this study to a rural sample with limited resources. Also, the individual woman's birth experience, past breastfeeding exposure/experience, and parity may have influenced their decision to breastfeed. Furthermore, maternal and infant's health could have affected the continuation of breastfeeding at 12 weeks postpartum. Other factors that were not specifically included in this study could have influenced a woman's decision to breastfeed such as the health care systems availability of lactation services, breastfeeding follow-up, and means for pumping. Lastly, the majority of the

sample consisted of middle income women who may have had access to lactation information and support from the Internet.

We used the Health Promotion Model as the conceptual framework for our study to predict the continuation of breastfeeding among employed women. This model is wellness-oriented and looks at five modifying factors that fit with the variables of our study and influence cognitive/perceptual factors that in turn effect health promoting behaviors. The modifying factors are seen as being amenable to change (except for demographic factors) and thus are a basis for our study design and interventions to promote breastfeeding. Our findings provided partial support for use of the Health Promotion Model. In particular, some of the modifying factors, such as the situational factors of longer maternity leave and occupation status and the demographic variable of education level, emerged as contributing to health promotion behaviors (continuation of breastfeeding) among employed breastfeeding mothers. Other modifying factors such as the situational factors of job flexibility and family income, the biologic characteristic of race/ethnicity, and the interpersonal influences of relationship status and social support were not significant detriments to health promotion behaviors among employed breastfeeding mothers. However, the small sample size and homogeneity of the sample may have contributed to the lack of significant findings.

### *Strengths and Limitations*

The study was strengthened through a variety of methods. First, data were obtained from a secondary source, which was economically feasible and less time consuming. Second, through using a secondary data source, a new sample of breastfeeding mothers were not exposed to additional personal and private questions. Third, maternity nurses were specially trained in non-biased interviewing for conducting the pilot study. Using specially trained nurses eliminated

bias by ensuring that the interview was completed in a similar fashion. The mothers also knew the nurse from the maternity ward who did the initial interview, so they were more likely to feel comfortable in answering very personal questions. Fourth, the subjects were compensated for their time by receiving a small monetary gift. Using a stipend for incentive to complete the survey likely increased the response rate. Lastly, this proposal consisted of data on breastfeeding among employed mothers located in the Twin Cities, which has not been studied prior to the Maternal Health Study.

Limitations to the study are noteworthy. Obtaining a small, convenience sample of English speaking mothers who were predominantly White women over the age of 18 and who all resided in a specific geographical location is a significant limitation. This limits the generalizability of the findings to other groups of women including adolescents, foreign speaking mothers, ethnic populations, and geographical locations. Another limitation stems from the collection of self-reported responses that may have been reported erroneously. Mothers may feel uncomfortable with personal questions and may provide false information. Other limitations include use of data intended for another research study. Manipulating existing data may produce false information. All patients in this study delivered healthy infants. Breastfeeding duration and factors affecting the duration of breastfeeding may be quite different among women whose infants require extended periods of hospitalization. Also, although different ethnicities were included in the sample, they were limited to those participants who were able to speak English. The limitations to participation may have excluded valuable ethnic information that relates to breastfeeding duration. Finally, our study optimally would have used multivariate analysis, which would have been more congruent with Pender's Health Promotion Model.

*Implications for Practice*

Findings from this study should be used to develop educational interventions for health care professionals to actively promote working mothers to continue breastfeeding. These interventions can be targeted to members of the community to include large business owners or executives down to small business and the self-employed. These interventions can also be targeted to working mothers with less than high school education, working mothers with shorter maternity leave time, and working mothers employed in service occupations. Ideally, interventions to promote breastfeeding within this special group could be implemented early in the pregnancy and carried forward through the postpartum period. Specifically, efforts should be made to overcome the barriers associated with working and breastfeeding. For example, it would be helpful to assist and educate working mothers in finding available resources to assist them in breastfeeding before they are discharged from the hospital. Providing working mothers with the proper tools, such as breast pumps and storage containers and finding private space for pumping, before they are discharged may prolong the duration they breastfeed their newborn. Another option would be to look at national maternity leave policies and extend this period for employed American women. A special effort must be made to overcome biases present in the health care system by training health care professionals to encourage breastfeeding among all mothers regardless of occupation, leave status, or education level.

*Implications for Research*

This study implies that there is still a large gap in research in the area of working women and breastfeeding. Additional research may include studying the relationship of breastfeeding duration and maternal, medical staff, and employers' attitudes towards breastfeeding. It may also be beneficial to look at a large corporation who has implemented lactation support for

working mothers, including longer maternity leave and lactation rooms with available equipment and storage after returning to work, to see if this has an impact on breastfeeding duration. Other research ideas may be to determine the relationship between continuation of breastfeeding and the amount of maternity staff follow-up and or breastfeeding support groups. Lastly, after refining the research techniques with the pilot study and secondary data analysis, a more definitive study with a more diverse population should be conducted.

### *Conclusion*

In conclusion, the results of our study indicate that a significant relationship exists between longer maternity leave, occupation status, and education level, and the length of breastfeeding for working mothers. In this study, job flexibility, race, family income, relationship status, and social support were not determined to be significantly related to the duration of breastfeeding for working mothers. The literature suggests that barriers exist, making it difficult for working mothers to continue breastfeeding. Although the sample size was small, the findings of this study and similar research may be used to increase the awareness of medical professionals and communities regarding barriers to breastfeeding continuation among employed women. Results from our data collection may also be used to foster maternity staff implementation of prenatal and breastfeeding programs/classes for health professionals and parents-to-be with an emphasis on tools to successfully combine employment and breastfeeding. These results should also be used to focus on importance of follow-up care and support well beyond the immediate postpartum period for working breastfeeding mothers.

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## Appendix A

☐ Check here if woman not alone

Maternal Health Study  
PARTICIPANT INFORMATION FORM

Nurse's Initials \_\_\_\_\_  
Date \_\_\_\_\_

Once the woman has signed the consent form, explain that you will need to ask her some questions about her life before this pregnancy, her experiences during this pregnancy and her plans for the future with her new baby.

Let's begin with some questions about your life before this pregnancy:

- 1) How would you rate your health in general, before this pregnancy? Would you say that your health was... (Read choices 1-5 and circle one number)

1	2	3	4	5	6	7	8	9
Excellent	Very Good	Good	Fair	Poor			Unsure	Refused

- 2) Before this pregnancy, how much choice would you say that you had in deciding the time and effort you spent on caring for your family, doing chores at home, and working at your job? Please rate your response on a scale from 1 to 7, where 1 means "very little or no choice" and 7 means "a lot or complete choice." (Circle one number).

1	2	3	4	5	6	7	8	9
Very little or no choice						A lot or complete choice	Unsure	Refused

- 3) Before this pregnancy, how did chores such as cleaning, meal preparation and paying bills get done around your house? Please rate your response on a scale from 1 to 7 where 1 means someone else did everything, 4 means you shared the chores equally with someone else, and 7 means that you did everything. (Circle one number)

1	2	3	4	5	6	7	8	9
Someone else did everything			Shared equally			You did everything	Unsure	Refused

- 4) Before this pregnancy, how satisfied were you with how you balanced your time between work and family? Would you say that you were... (Read choices 1-5 and circle one number)

1	2	3	4	5	6	7	8	9
Very Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor Dissatisfied	Somewhat Satisfied	Very Satisfied			Unsure	Refused

Now I have some questions about your pregnancy and your current life experiences:

- 5) Did you take any pregnancy-related time away from your job before your baby was born? This would include any paid or unpaid maternity, family, disability, sick or vacation leave you used to take time off work as a direct result of this pregnancy.

☐ Yes ⇒ How many days did you take? \_\_\_\_\_ Days  
☐ No

☐ Unsure  
☐ Refused

- 6) During this pregnancy, did you ever have a problem with your mood, such as feeling depressed or anxious?

☐ Yes  
☐ No

☐ Unsure  
☐ Refused

- 7) Did you smoke cigarettes during this pregnancy?

☐ Yes

☐ No (SKIP TO Q.9)

☐ Unsure (SKIP TO Q.9)  
☐ Refused (SKIP TO Q.9)

- 8) How many cigarettes per day would you say you smoked, on average, during this pregnancy?

\_\_\_\_\_ Cigarettes per day

☐ Unsure  
☐ Refused

**For the next three questions, think about your job with your main employer:**

- 9) How satisfied are you overall with your current job? Would you say that you are... (Read each choice. Check one.)

☐ Very dissatisfied  
☐ Somewhat dissatisfied  
☐ Somewhat satisfied  
☐ Very satisfied

☐ Unsure  
☐ Refused

- 10) On a scale from 1 to 7, where 1 means "Never" and 7 means "All of the time," how often do you feel you have too much to do at work? (Circle one number)

1	2	3	4	5	6	7	8	9
Never						All of the time	Unsure	Refused

- 11) On a scale from 1 to 7, where 1 means "Never" and 7 means "All of the time," how often do you experience stress due to your job? (Circle one number)

1	2	3	4	5	6	7	8	9
Never						All of the time	Unsure	Refused

- 12) On a scale from 1 to 7, where 1 means "Not at all Important," 4 means you have "Mixed feelings" and 7 means it is "Very important", how important is it to you personally to work at a job in addition to being a mother? (Circle one number)

1	2	3	4	5	6	7	8	9
Not at all Important			Mixed feelings			Very important	Unsure	Refused

**Now I have some questions about plans after you leave the hospital:**  
**(CONTINUE - NEXT PAGE)**

13) After your baby is born, how long do you expect to be on leave from your job? By leave I mean paid or unpaid leave used to take time off work. (If the woman plans to return to work part-time, temporarily reducing her usual scheduled hours, please include those weeks of reduced hours as leave).

\_\_\_\_ Weeks

\_\_\_\_ Days (Only if less than one week)

- ☐ Unsure  
☐ Refused

14) Do you intend to begin feeding your newborn with: (Read list and check one)

- ☐ Breast milk only  
☐ Infant formula only  
☐ Some combination of breast milk and infant formula

- ☐ Unsure  
☐ Refused

**Finally, I have some questions about you personally and your background:**

15) Not including yourself or employees (such as a live-in nanny) how many other adults, 18 years or older, do you live with and consider a family or household member?

\_\_\_\_ Other adults

- ☐ Unsure  
☐ Refused

16) What is the highest level of education you completed? (Check one as appropriate to the response)

- ☐ Elementary School or less  
☐ Junior High (8<sup>th</sup> or 9<sup>th</sup> grade)  
☐ High School diploma or GED

- ☐ Junior College (1-2 years of college or vocational certificate)  
☐ College Graduate (4 years)  
☐ Graduate School (Master's degree or higher)

- ☐ Unsure  
☐ Refused

17) Are you of Hispanic or Latino origin?

- ☐ Yes  
☐ No

- ☐ Unsure  
☐ Refused

18) Which of the following options best describes your race? (Read list and check one):

- ☐ American Indian or Alaska Native  
☐ Asian  
☐ Black or African American

- ☐ Native Hawaiian or other Pacific Islander  
☐ White/Caucasian  
☐ Other (specify) \_\_\_\_\_

- ☐ Unsure  
☐ Refused

(Includes any combination of previous categories)

19) For 1999, what were your total earnings from all jobs/employers? This should include only your personal earnings and not those of a spouse or partner.

\$ \_\_\_\_\_ for 1999

- ☐ Unsure  
☐ Refused

20) To the best of your knowledge, what was the total income for your household in 1999? If questioned, indicate this should include all earned (e.g., wages, tips, salaries) and unearned income (e.g., public assistance cash benefits, at-home infant care subsidy payments, child or spousal support) received by individuals residing in the household.

\$ \_\_\_\_\_ for 1999 (Skip to Q.22) OR

- ☐ Unsure; go Q. 21 ⇒ (back side)  
☐ Refused; go to Q. 21 ⇒ (back side)

21) This table to be filled out only for women who indicated they were unsure about their household income for 1999 or who refused to answer this question (Q.20). If the woman is willing to have you help her estimate her income, follow the steps below to complete the table.

- 1) Ask the woman how many total people (adults and children) resided in her household in 1999. Be sure she includes herself but not her new baby.
- 2) Circle the appropriate number of people in the woman's household under "Column A" in the table below.
- 3) Circle dollar amount from Column B that corresponds with the number of people circled in Column A.
- 4) Ask the woman if the total income for her household in 1999 is ABOVE the circled dollar amount in Column B.
- 5) Check either "yes," "no," or "Unsure" in Column C.

**Note:** The woman should include all earned income and unearned income. Earned income includes wages, tips, and salaries; unearned income includes things like public assistance cash benefits, at-home infant care subsidy payments, and child or spousal support payments.

<b>COLUMN A</b> CIRCLE THE # OF PEOPLE IN THE WOMAN'S HOUSE- HOLD (FOR 1999). THIS SHOULD INCLUDE THE WOMAN <u>BUT NOT</u> HER NEW BABY...	<b>COLUMN B</b> CIRCLE DOLLAR AMOUNT FOR CORRESPONDING ROW IN COLUMN A..."	<b>COLUMN C</b> RESPOND... CHECK "YES," "NO," OR "UNSURE"		
1	Above \$24,123?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Unsure
2	Above \$29,782?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Unsure
3	Above \$36,790?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Unsure
4	Above \$43,798?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Unsure
5	Above \$50,805?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Unsure
6	Above \$57,812?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Unsure
7	Above \$59,126?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Unsure

\*Cutoffs averaged for 1999-2000

☐ Check here if refused

(CONTINUE WITH Q.22)

*Tell the woman you will need to collect some information so her interviewer can contact her to schedule the first interview and get to know her better.*

22) What are the first names and ages of all children under the age of 18 living in your household?  
Let's start with your new baby...

	First Name:	Unsure	Refused	Age in Months:	Age in Years (If 12 months or older):	Unsure	Refused
New Baby	_____	<input type="checkbox"/>	<input type="checkbox"/>	(NA)	(NA)	(NA)	(NA)
Other Child #1	_____		<input type="checkbox"/>	____mo.	____yrs.	<input type="checkbox"/>	<input type="checkbox"/>
Other Child #2	_____		<input type="checkbox"/>	____mo.	____yrs.	<input type="checkbox"/>	<input type="checkbox"/>
Other Child #3	_____		<input type="checkbox"/>	____mo.	____yrs.	<input type="checkbox"/>	<input type="checkbox"/>
Other Child #4	_____		<input type="checkbox"/>	____mo.	____yrs.	<input type="checkbox"/>	<input type="checkbox"/>

23) Fill in the requested information below regarding when and how we should contact the woman:

**PLEASE PRINT:**

Name: \_\_\_\_\_ Phone: (H) \_\_\_\_\_  
(First) (Middle Initial) (Last) (W) \_\_\_\_\_

Address: \_\_\_\_\_  
(Number/Street) (Apt #) (City) (State) (Zip)

E-mail: \_\_\_\_\_ (optional)

Best day(s) to call: Monday Tuesday Wednesday Thursday Friday

Best time(s) to call: 9 a.m.-12 p.m. 12 p.m. - 5 p.m. 5 p.m.-9 p.m.  
(morning) (afternoon) (evening)

Call at: Home Work Either

NAME AND PHONE NUMBER OF RELATIVE/FRIEND (explain this is to be used ONLY if we are unable to reach her in person):

Friend/Relative Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Today's Date: \_\_\_\_\_

ADDITIONAL NOTES/Questions that were hard to answer:

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**THANK THE WOMAN FOR HER TIME AND FOR HER INTEREST IN THE STUDY;  
INFORM HER SHE WILL BE RECEIVING A POSTCARD IN THE MAIL IN THE NEXT COUPLE OF  
WEEKS TO WELCOME HER TO THE STUDY AND PROVIDE HER WITH SOME INFORMATION**

## Appendix B

## MATERNAL POSTPARTUM HEALTH STUDY – QUESTIONNAIRE (12 WEEKS)

## PILOT VERSION A (01-15-01)

C1. **12 Week Interview Status:** *Select mini-interview here if you already know the woman does not have time to do the full interview and you cannot reschedule for another time to complete the full interview.*

1. Full interview
2. Mini-interview (*CONTINUE WITH SEPARATE MINI INTERVIEW; C3*)
3. Terminate interview (Specify reason):

---

**DEFINITIONS OF EMPLOYER USED IN THE 12-WEEK INTERVIEW:**

**“Main Employer”** = Main employer as defined at the time of childbirth (i.e., when the nurse enrolled her)

**“Current Employer”** = Employer woman now works for (may be same as “main employer” or may have changed)

**“Primary Employer”** = For a woman with more than one employer, we would consider the primary employer to be the employer from which she currently receives her benefits. If neither or both employers provide benefits, let the woman decide who her primary employer is.

---

**SECTION 1 – EMPLOYMENT STATUS**

C3. Are you now: (*Circle one response*)

1. On leave from work, although still employed? (*CONTINUE WITH C4*)
2. Working again for your **same employer** (i.e., from last interview) whether you went into the office or worked from home? (*CONTINUE WITH C4*)
3. Working again but with a **new employer**? (*CONTINUE WITH C4*)
4. Unemployed? (*GO TO SEPARATE MINI-INTERVIEW AND TRANSFER RESPONSE TO C3*)

*Note to interviewer: This question should be answered according to whether the employer recognizes the woman as being on leave (or not on leave). For example, if a woman is “officially” on leave but her employer is asking her to do work (either at the office or at home), you should select Option 1 (On leave from work).*



C4. Our records show that your **main job** is (with **Pre-insert main employer's name/Self employment**). Is this correct?

1. Yes (name is correct and woman is still employed with this employer) ⇒
2. No, the employer name is incorrect (either the employer name is wrong or the woman changed employers) (*CONTINUE WITH C5*)
9. Refused (*SKIP TO BOX BEFORE C6*)

C5. What is the name of your current employer/business\*?

\_\_\_\_\_ Current employer's (or business) name

*\*If a woman has more than one employer, determine who her primary employer is. This would be the employer from which she currently receives her benefits. If neither or both employers provide benefits, let the woman decide who her primary employer is and refer to that employer as her current employer throughout the interview*

C5a. Are you currently self-employed for your primary job?

1. Yes
2. No
7. Unsure
9. Refused

C6. What month and year did you first start working in this arrangement?

\_\_\_\_\_/\_\_\_\_\_  
(Month) (Year) (If unsure of month, fill in a year only)

7. Unsure
9. Refused

C6a. Did you **quit** your previous job with (**Insert name of main employer**) or were you **let go** (e.g., laid off or fired)?

1. Quit (*CONTINUE WITH C6b*)
2. Let go (laid off or fired) ⇒ Why were you let go or fired?

\_\_\_\_\_ (*SKIP TO C6c*)

9. Refused (*SKIP TO C6c*)

C6b. The following are reasons why some women might quit their job. Which was the **main reason** for you: (*Read list and circle one main reason.*)

1. I **prefer staying home** with my baby to working
  2. I had **problems with childcare** ⇒ What kind of problems? (*Please circle all that apply*)
    - a. It was too expensive
    - b. It was too hard to find
    - c. It was poor quality
    - d. Other (*Please describe*): \_\_\_\_\_
  3. I found combining a job and care of the baby was **too tiring or stressful**  
(Appendix B)
  4. My **supervisor wanted me to return to work** sooner or do work at home **before I was ready**
  5. Other (*Please specify*): \_\_\_\_\_
  7. Unsure
  9. Refused
- C6c. For **how long** were you on **either paid or unpaid leave** in association with this pregnancy and childbirth? This would include any leave you took **before and/or after childbirth** while you were still employed with (**Insert name of main employer**). (*Fill in a number under days, weeks, or months. None=0 days.*)
- \_\_\_\_\_ Days on leave before and after childbirth (*Only if less than one work week*)
- \_\_\_\_\_ Weeks on leave before and after childbirth
- \_\_\_\_\_ Months on leave before and after childbirth
7. Unsure
9. Refused

## SECTION 2 – RESUMED WORK ONLY

**C7. What was the first day after childbirth that you started working again ⇒**

**(for any employer and for any effort over one hour)?**

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Month Day Year Date started working

7. Unsure
9. Refused

*NOTE: USE CALENDAR TO  
PROBE FOR CORRECT DATE*

C8. About how many hours per week are you currently scheduled or required to work at your primary job with (**Insert name of current employer**)?

\_\_\_\_\_ Hours per week

7. Unsure
9. Refused

C9. Do you currently work for pay at more than one job?

1. Yes
2. No

9. Refused

C10. About how many hours per week **are you scheduled** or required to work for **other** employers?

\_\_\_\_\_ Hours per week

7. Unsure

9. Refused

Now I have some questions about **infant feeding**.

C32. Which of the following are you **currently** feeding your baby? (*Circle all that apply*)

1. Breast milk

2. Infant formula (regular or soy formula)

3. Milk (cow or soy milk)

4. Other (*Please*

*describe*): \_\_\_\_\_

7. Unsure

9. Refused

### **SECTION 11 – MOTHER'S JOB**

Now I have some questions about your **current employment** situation.

C68. On a scale from 1 to 7 where 1 means "not very important," 4 means "mixed feelings," and 7 means "very important," how important is it **to you personally** to work at a job in addition to being a mother? (*Circle one number*)

1	2	3	4	5	6	7
Not very important			Mixed feelings			
		Very Important				

8. Unsure

9. Refused

### **WORKING AGAIN**

C69a. Has your job title with (**with Insert employer name/Self employment**) changed since our last interview on (**Insert date of last interview**)?

1. Yes (*CONTINUE WITH C69*)

2. No (*SKIP TO C69b*)

7. Unsure

9. Refused

C69. What is your current job title? (*Please be specific*)

- 
- 7. Unsure
  - 9. Refused

C69b. Have your most important job duties changed significantly since our last interview?

- 1. Yes
- 2. No

C70. How have your **most important activities** or duties changed? (*Please describe*)

---

- 7. Unsure
- 9. Refused

C71. Currently, how many **nights per month** are you away from home because of work-related (overnight) travel?

\_\_\_\_\_ Nights per month

- 1. None
- 7. Unsure
- 9. Refused

C72. Are you currently paid as an **hourly or salaried** worker?

- 1. Hourly
  - 2. Salaried
  - 3. Other (*Please describe*)
- 

- 7. Unsure
- 9. Refused

C73. Do you normally work any **evening, night or rotating** shifts?

- 1. Yes
- 2. No
- 7. Unsure
- 9. Refused

- 2. No
- 7. Unsure
- 9. Refused

C74x. Do you currently belong to a **labor union**?

1. Yes  $\Rightarrow$  How long have you been a member of this? (Fill in one blank)

2. No

7. Unsure

9. Refused

\_\_\_\_\_ Years

\_\_\_\_\_ Months (If less than one year)

C75x. In what **type of business** is your new company primarily engaged in? Would you classify this as...

01 Agriculture, forestry & fishing

02 Mining

03 Construction

04 Manufacturing

05 Transportation, communications & utilities

06 Trade (wholesale/retail) (e.g., restaurant, retail pharmacy, retail store)

07 Finance, banking, insurance & real estate

08 Services (Read list only if "Services" and circle one)

09 business & repair services (e.g., advertising, computer/data processing, detective/protective services, business services)

10 personal services (e.g., household, hotel, beauty shops, shoe repair, dress making)

11 entertainment and recreation

12 professional and related services (e.g., health care, education, social services, religious membership)

13 public administration

14 active military duty

15 Other: (Please describe) \_\_\_\_\_

89. Unsure

99. Refused

Thank you so much for your time.

## Appendix C

## UNIVERSITY OF MINNESOTA

*Twin Cities Campus**Research Subjects' Protection Programs**Institutional Review Board: Human Subjects Committee (IRB)  
Institutional Animal Care and Use Committee (IACUC)**Mayo Mail Code 820  
D-528 Mayo Memorial Building  
420 Delaware Street S.E.  
Minneapolis, MN 55455*

July 08, 2002

Anna N. Hunter  
2416 Parkview Blvd.  
Golden Valley MN 55422*612-626-5654  
Fax: 612-626-6061  
irb@umn.edu  
iacuc@umn.edu  
<http://www.research.umn.edu/subjects.htm>*Re: "Breastfeeding 12 Weeks Post-Partum Among Employed Women"  
Human Subjects Code Number: 0207E28505

Dear Ms. Hunter:

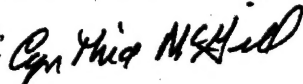
The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #4 EXISTING DATA; RECORDS REVIEW; PATHOLOGICAL SPECIMENS.

The code number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

Upon receipt of this letter, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

The IRB wishes you success with this research.

Sincerely,

Cynthia McGill  
Executive Assistant

CM/ae

CC: Catherine Juve, Lori Miller, Erica Weber

## Appendix D

**MATERNAL HEALTH STUDY****Statement of Informed Consent for Pilot Study**

I am being asked to participate in a research study that will investigate how women today are balancing motherhood and employment. The purpose of this study is to evaluate the relationship between work, caring for a new baby and other family members, and women's health and quality of life. University of Minnesota faculty including Pat McGovern, Ph.D., Dwenda Gjerdengen, MD, Bryan Dowd, Ph.D., Cindy Gross, Ph.D., and Sally Kenney, Ph.D, are conducting this research.

My involvement in this research would be over a period of approximately 18 months. The procedure would include participating in a telephone interview at approximately six weeks, three months, six months, 12 months and 18 months after childbirth. I also give my permission to researchers to review my (and my baby's) hospital records specific to pregnancy, labor, and delivery for health conditions that might influence my plans to return to work. Examples would include the type of delivery I had (such as a c-section rather than a vaginal delivery), my medical risk factors (such as high blood pressure or diabetes) or those of my baby (such as low birth weight and weeks of gestation).

During the telephone interviews, I understand that I will be asked questions about my health, my baby's health and characteristics of my family, job and child care arrangements. My responses to all questions and data collected from my medical records will be kept strictly confidential. Only those researchers who need to see the study records will be allowed to do so. In any reports of this study, I will not be identified by name and only summary data on all participants will be presented in any report published or presentations given by the researchers. My decision to participate in this study is voluntary and will in no way affect my relationship with my physician, clinic, or the University of Minnesota. If I decide to participate, I am free to discontinue participation at any time with no penalty. I am also free to not answer selected questions if they make me feel uncomfortable. There are no risks of injury or harm in association with participating in this project. While there are no direct benefits to participation in the study, many women who take part in studies like these say they learn a lot about themselves and feel that it is personally worthwhile.

I will be provided a \$5.00 gift certificate from Target Stores for each of the interviews I complete and an additional \$5.00 gift certificate if I complete all five study interviews (for a total of \$30.00 in gift certificates).

During the second interview (approximately three months after childbirth), I may be asked for my permission to participate in an employer sub-study. If I agree and am selected (as one of 30 women that will be randomly selected to participate), researchers would call my employer to learn what, if any, maternity, family, or medical leave is available to any woman as a matter of company policy. I understand I will NOT be personally identified to my employer at any time, nor will my employer be named in any summary of the study results. In addition, I understand I have the right to refuse this request and still participate in the overall study on women's health.

If I have questions about the study, I may contact Pat McGovern, RN, Ph.D. (Principal Investigator) at 612-625-7429 or Laurie Ukestad, M.S. (Project Manager) at 612-626-2842. If I have questions I cannot talk about with the researchers, such as my rights as a research subject, I may contact the Institutional Review Committee at North Memorial Medical Center at 612-520-5353.

I have read and understand this informed consent. I have been offered a  
copy of this consent from to keep.

Name (please print): \_\_\_\_\_

My Signature: \_\_\_\_\_ Date \_\_\_\_\_

Witness (Nurse) Signature: \_\_\_\_\_ Date \_\_\_\_\_